



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,367	12/14/2001	Shigeki Watanabe	826.1777	1144

21171 7590 03/09/2005

STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER

PAYNE, DAVID C

ART UNIT	PAPER NUMBER
----------	--------------

2633

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/014,367	Applicant(s) WATANABE ET AL	
	Examiner David C. Payne	Art Unit 2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2001.
 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-14 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☒ The drawing(s) filed on 14 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/4/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim(s) 5 and 6 is/are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. The term "large value" in claim 5 is a relative term, which renders the claim indefinite. The term "large value" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. A "large value" for the non-linear refractive index of the fiber core does not provide a definite meaning.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the

Art Unit: 2633

applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim(s) 1 and 10 is/are rejected under 35 U.S.C. 102(e) as being anticipated by Shake et al. US 6587242 B1 (Shake).

Re claims 1, and 10, Shake disclosed,

An optical pulse addition device for demultiplexing/multiplexing a plurality of time-division multiplexed optical signals in terms of time without converting the optical signals into a plurality of electrical signals, comprising: a chirp unit generating a frequency chirp in an inputted optical signal composed of a plurality of optical pulses and extending a spectrum of the optical pulse (13 of Figure 1); a transmission unit transmitting a part of the extended spectrum through a band around a prescribed wavelength (12 of Figure 1); and an addition unit adding an optical pulse corresponding to the transmitted band to a time-division multiplexed optical signal with the prescribed wavelength (14 of Figure 1).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim(s) 2 and 3 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Shake et al. US 6587242 B1 (Shake) in view of MacDonald et al. US

Art Unit: 2633

5519723 A (MacDonald).

Re claims 2 and 3, Shake disclosed the aforementioned invention but not wherein said chirp unit is made of a third order non-linear medium semiconductor material.

MacDonald disclosed the use of a third order non-linear medium for use in four wave-mixing applications, col./line: 2/15-15. It would have been obvious to one of ordinary skill in the art at the time of invention to use such a medium in the Shake invention because its properties provide sufficient cross-coupling to effect spectrum broadeneding.

9. Claim(s) 2, 4, 9 and 11 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Shake et al. US 6587242 B1 (Shake) in view of Saito et al. US 5457559 A (Saito).

Re claims 2 and 4, Shake disclosed the aforementioned invention but not wherein said chirp unit is made of a third order non-linear fiber.

Saito disclosed the use of a third order non-linear medium for use in OTDM applications, col./line: 14/34-40. It would have been obvious to one of ordinary skill in the art at the time of invention to use such a medium in the Shake invention because its properties provide sufficient cross-coupling to effect spectrum broadeneding.

Re claim 9, the modified invention disclosed an amplification unit amplifying a strength level of an optical pulse inputted to the optical fiber up to a level such that a prescribed chirp can be generated in the optical fiber (see Shake, 51 of Figure 7).

Art Unit: 2633

Re claim 11, the modified invention disclosed wherein a light intensity modulator, an interferometer type non-linear optical switch or a four-optical wave mixer is used for said optical branching unit (see Shake, Figure 3A).

10. Claim(s) 7 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Shake et al. US 6587242 B1 (Shake) and Saito et al. US 5457559 A (Saito) as applied to claim 4 above, and in further view of Evans et al. 5579428 (Evans).

Re claim 7, the modified invention of Shake and Saito as disclosed above does not disclose wherein the optical fiber is a dispersion-flat fiber.

Evans disclosed the use of dispersion-flat fiber, col./line(s): 4/15-30. It would have been obvious to one of ordinary skill in the art at the time of invention to use dispersion flattened fiber in the modified invention since this type of fiber limits pulse power shifts due to variation in the amplifier gain curve with wavelength. In addition, the flatness of the dispersion slope effectively prevents two pulses from passing through one another within the length of a single optical amplifier.

11. Claim(s) 8 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Shake et al. US 6587242 B1 (Shake) and Saito et al. US 5457559 A (Saito) as applied to claim 4 above, and in further view of Libori et al. US 6792188 B2 (Libori).

Re claim 8, the modified invention of Shake and Saito as disclosed above does not disclose wherein the optical fiber is a holey fiber.

Libori disclosed the use of holey fiber (Figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to use holey fiber in the

Art Unit: 2633

modified invention since this type of fiber has an effective index that is lower than the core refractive index at all wavelengths. The features of the inner cladding region (preferably air holes) act to lower the effective refractive index compared to the effective refractive index of the outer cladding region, see Libori col./line(s): 2/40-50.

12. Claim(s) 12 and 14 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Shake et al. US 6587242 B1 (Shake) in view of Mamyshev US 6141129 A (Mamyshev).

Re claim 12, Shake disclosed the aforementioned invention but not wherein said transmission unit has a plurality of transmission bands. Mamyshev disclosed an optical medium with a plurality of transmission bands, see col./lines: 10/40-45. It would have been obvious to one of ordinary skill in the art at the time of invention to use a transmission unit with a plurality of bands the apparatus would function at a plurality of wavelengths.

Re claim 14, Shake disclosed which increases a multiplex degree of time-division multiplex signals by repeating processes of said chirp unit, transmission unit and addition unit (Figure 1).

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Payne whose telephone number is (571) 272-3024. The examiner can normally be reached on M-F, 7a-4p.

Art Unit: 2633

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dcp



David C. Payne
Patent Examiner
AU 2633